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The predictive ability of the frequency of perfectionistic cognitions, self-oriented perfectionism, and socially prescribed perfectionism in relation to symptoms of burnout in youth rugby players

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Abstract

Perfectionism has been identified as an antecedent of athlete burnout. However, to date, researchers examining the relationship between perfectionism and athlete burnout have measured perfectionism at a trait level. The work of Flett and colleagues (Flett, Hewitt, Blankstein, & Gray, 1998) suggests that perfectionism can also be assessed in terms of individual differences in the frequency with which they experience perfectionistic cognitions. The purpose of this investigation was to: (i) examine the relationship between the frequency of perfectionistic cognitions and symptoms of athlete burnout; and (ii) examine whether the frequency of perfectionistic cognitions account for additional unique variance in symptoms of athlete burnout above the variance accounted for by self-oriented and socially prescribed dimensions of perfectionism. Two-hundred and two male rugby players (age *M* = 18.81, *SD* 2.87, range 16-24) were recruited from youth teams of professional and semi-professional rugby union clubs in the UK. Participants completed measures of trait perfectionism, frequency of perfectionistic cognitions and symptoms of athlete burnout. The frequency of perfectionistic cognitions was positively related to all symptoms of athlete burnout and explained 3-4% unique variance in symptoms of athlete burnout after controlling for self-oriented and socially prescribed dimensions of perfectionism. Findings suggest that the frequency with which perfectionistic cognitions are experienced may also be an antecedent of athlete burnout. Perfectionistic cognitions should, therefore, be considered in both future models of the relationship between perfectionism and athlete burnout, as well as interventions aimed at reducing perfectionism fuelled burnout.

Introduction

Striving and competing in elite sport requires extraordinary levels of dedication and physically demanding training. However, researchers have suggested that while high levels of investment are necessary, it may also render some athletes susceptible to the development of burnout (Gustafsson, Hassmen, Kentta, & Johansson, 2007). Burnout is a syndrome comprising three core symptoms. The first symptom is an enduring depletion of emotional and physical resources beyond that associated with routine practice and competition. The second symptom is a sense of reduced accomplishment in terms of sport abilities and achievement that develops regardless of objective success. The third symptom is the eventual devaluation of ones participation in sport (Raedeke & Smith, 2001). Research suggests that these symptoms are associated with a number of aversive consequences for athletes that include performance decrements, emotional difficulties and potential dropout (Cresswell & Eklund, 2006a; Goodger, Gorely, Lavallee, & Harwood, 2007). Consequently, the costs of burnout may be substantial in terms of both the psychological welfare of athletes and unfulfilled athletic potential (Feigley, 1984).

There are currently a number of theoretical explanations for the development of athlete burnout (see Cresswell & Eklund, 2006b). To date, Smith's (1986) cognitive-affective model has received the greatest attention and empirical support. According to this model, burnout is the product of chronic stress that arises as a consequence of an appraisal process in which demands are continually considered to outweigh personal resources. For athletes, the experience of burnout is an intensely emotional time as they must cope with the

realisation that, despite heavy investment, they may fall short of the personal goals that energise their involvement (Cresswell & Eklund, 2006a; Gould, 1996; Gustafsson et al., 2007). Personality factors are considered to be important in Smith's stress-based model because they influence the appraisal process by giving meaning to personal failure (Smith, 1986; Lazarus & Folkman, 1984).

Perfectionism is a personality factor broadly defined as a combination of a commitment to exceedingly high standards and evaluative concerns (Frost, Marten, Lahart, & Rosenblate, 1990; Hewitt & Flett, 1991). Unlike more adaptive achievement related personality factors (e.g., conscientiousness), the achievement striving energised by perfectionism is purported to include both approach and avoidance motives, as well as self-critical tendencies (Blatt, 1995). This complex mix is believed to reflect a conditional sense of acceptance and the desire to validate a sense of self-worth (Burns, 1980; Greenspon, 2000; Hollander, 1965). As described here, perfectionism is a potent energising force but ultimately provides the basis for substantial psychological difficulties if achievement striving is unsuccessful. It is for these reasons that a number of sport psychologists suggested some time ago that perfectionism may be an especially important personality factor when identifying athletes who are at risk to burnout (e.g., Dale & Weinberg, 1990; Feigley, 1984; Gould, Tuffey, Udry, & Loehr, 1996a). However, it is only recently that the perfectionism-athlete burnout relationship has received systematic attention.

There are currently a number of approaches to the conceptualisation and measurement of perfectionism (e.g., Frost, et al., 1990; Hewitt & Flett, 1991; Slade & Owens, 1998). However, researchers have suggested that these models

typically include dimensions of perfectionism that measure either a commitment to exceptionally high standards or evaluative concerns (e.g., Frost, Heimberg, Holt, Mattia, & Neubauer, 1993). Researchers examining the consequences of perfectionism for athletes have generally found that, when considered in isolation, dimensions assessing a commitment to exceptionally high standards (e.g., high personal standards and perfectionistic striving) are associated with positive consequences, whereas dimensions assessing evaluative concerns (e.g., concern over mistakes, perceived parental and coach pressure) are associated with negative consequences (see Stoeber & Otto, 2006). Some of these consequences are indicative of an adverse influence of trait dimensions of perfectionism on the appraisal process and the potential for perfectionism to contribute to the development of burnout in the manner described by Smith (1986). This includes the experience of higher levels of anxiety at various points in the performance process (e.g., Frost & Henderson, 1991; Hall, Kerr, & Matthews, 1998; Mor, Day, Flett, & Hewitt, 1995), as well as poorer coping tendencies (Gaudreau, & Antl, 2008).

Researchers also suggest that a distinction can be made between dimensions of perfectionism that assess commitment to exceptionally high standards and those that assess evaluative concerns in terms of their relationship with symptoms of athlete burnout (Chen, Kee, Chen, & Tsaï, 2008; Chen, Kee, & Tsaï, 2009; Gould et al., 1996a). Adopting an approach developed by Hewitt and Flett (1991), research by Hill and colleagues (Hill, Hall, & Appleton, 2010; Hill, Hall, Appleton, & Kozub, 2008; Hill, Hall, Appleton, & Murray, 2010) has, for example, found that socially prescribed perfectionism, the desire for validation

through the attainment of lofty external standards, and a component of evaluative concerns, is positively related to symptoms of burnout. In contrast, self-oriented perfectionism, the tendency to set high personal goals and engage in self-criticism, and a component of a commitment to exceptionally high standards, is inversely related to symptoms of burnout. The findings of this research suggest that self-oriented and socially prescribed perfectionism may be useful when examining the relationship between multidimensional perfectionism and athlete burnout. There is also further justification for adopting this approach. Specifically, researchers suggest that these dimensions are influential variables in stress related processes (see Hewitt & Flett, 2002) and therefore have clear theoretical links to burnout (see Hill et al., 2008). In addition, these dimensions appear to encapsulate the perceived (socially prescribed perfectionism) and self-imposed pressure (self-oriented perfectionism) reported by athletes who have experienced burnout (Gould, Tuffey, Udry, & Loehr, 1996b; Gustafsson et al., 2007).

To date, researchers examining the relationship between these and other dimensions of perfectionism with athlete burnout has measured perfectionism at a trait level. The work of Flett and colleagues (Flett et al., 1998) suggests, however, that perfectionism can also be assessed in terms of individual differences in the frequency with which they experience perfectionistic cognitions which have a larger state component. Perfectionistic cognitions are automatic thoughts and images involving the need to be perfect (Flett et al., 1998). They are indicative of a preoccupation with the attainment of perfection and the regularity with which individuals engage in self-evaluation against an ideal, perfect self (Flett et al., 1998; Hewitt & Genest, 1990). According to self-regulatory models (e.g., Carver

& Scheier, 1990; Martin & Tesser, 1996; Pyszczynski & Greenberg, 1987), under normal circumstances such self-focused attention serves an adaptive regulatory function that aids achievement striving. However, because perfectionism entails a focus on unobtainable goals that are tied to a sense of self-worth, perfectionistic cognitions are characterised by emotional turmoil and intrusive negative cognitions focused on personal inadequacies (Flett et al., 1998).

The research area of perfectionistic cognitions has received some attention outside of sport. Along with a strong association with trait dimensions of perfectionism, this research has found that the frequency of perfectionistic cognitions are associated with higher levels of anxiety, anger, self-criticism, negative forms of cognitive-emotion coping and deficits in positive forms of cognitive-emotion coping (Ferrari, 1995; Flett, Madorsky, Hewitt, & Heisel, 2002; Flett et al., 1998; Flett, Greene, & Hewitt, 2004; Rudolph, Flett, & Hewitt, 2007). Critically, researchers suggest that the frequency of perfectionistic cognitions warrant consideration in the perfectionism-distress relationship alongside trait dimensions of perfectionism. Specifically, Flett and colleagues (Flett et al., 1998; Flett, Hewitt, Whelan, & Martin, 2007) found that the frequency of perfectionistic cognitions explain additional variance in anxiety and depression after controlling for trait dimensions of perfectionism.

There have been comparatively few attempts to directly examine the experience of perfectionistic cognitions in athletes. Early research in this area suggests, however, that higher levels of trait perfectionism in athletes may encourage an aversive cognitive preoccupation with the attainment of perfection in terms of their performance. Frost and Henderson (1991), for example, found

that higher levels of trait perfectionism (concern over mistakes and personal standards) were positively associated with dreams of perfection, difficultly forgetting mistakes, and the frequency of recurring images of mistakes once they occurred during competition. It is possible that the frequency of perfectionistic cognitions may contribute to burnout symptoms by maintaining and intensifying such negative experiences. Although perfectionistic cognitions are a more state-like manifestation of perfectionism, they are also considered to be a relatively stable feature of the cognitive experience associated with perfectionism (Flett et al., 1998). Consequently, the frequency of perfectionistic cognitions may be a source of chronic stress, which according to Smith (1986) is the primary cause of athlete burnout.

In addition to being a predictor of higher levels of burnout, the frequency of perfectionistic cognitions may also predict variance in symptoms of athlete burnout above that explained by trait dimensions of perfectionism. The incremental predictive ability, or incremental validity (Hunsley & Meyer, 2002), of the frequency of perfectionistic cognitions is important in terms of justifying its inclusion in models of the perfectionism-burnout relationship. It may also be important in terms of the development of interventions aimed at managing the perfectionism in athletes. If the frequency of perfectionistic cognitions predicts additional unique variance in symptoms of burnout, it would suggest that targeting the experience of perfectionistic cognitions is a necessary additional strategy, alongside a focus on trait perfectionism, when attempting to prevent perfectionism fuelled burnout (Flett et al., 2007). Alternatively, the frequency of perfectionistic

cognitions may be a cognitive manifestation of perfectionism subsumed by trait perfectionism and redundant in terms of the prediction of burnout symptoms.

In this investigation, we aim to: (i) examine the relationship between the frequency of perfectionistic cognitions and symptoms of athlete burnout; and (ii) examine whether the frequency of perfectionistic cognitions account for additional unique variance in symptoms of athlete burnout above the variance accounted for by self-oriented and socially prescribed dimensions of perfectionism. In doing so, we aim to identify whether the frequency of perfectionistic cognitions is a useful addition to the perfectionism-burnout relationship. Based on the preceding argument, it was hypothesised that the frequency of perfectionistic cognitions would be a positive predictor of all symptoms of athlete burnout and would also predict additional variance in athlete burnout above that explained by self-oriented and socially prescribed dimensions of perfectionism.

Method

Participants

Participants were 202 male rugby union players (age *M* = 18.81, *SD* 2.87, range 16-24) recruited from youth teams of professional and semi-professional rugby union clubs in the UK. The mean number of years participating in rugby was 8.80 years (*SD* = 3.76) and had been at their club for 3.54 years (*SD* = 3.49). Participants also reported that in comparison to other activities they engaged in, their participation in rugby was very important (*M* = 8.18, *SD* = 1.00) on a nine-point Likert scale (1 = *not at all important* to 9 = *extremely important*). Participants complete a multi-sectional questionnaire that contained measures of symptoms of athlete burnout, self-oriented and socially prescribed perfectionism,

and perfectionistic cognitions prior to a training session. Informed consent was gained from each participant prior to completion of the questionnaire.

Instruments

Athlete Burnout. Symptoms of athlete burnout were measured using Raedeke and Smith's (2001) Athlete Burnout Questionnaire. This instrument measures athlete burnout across three subscales; a reduced sense of athletic accomplishment (e.g. "I am not performing up to my ability in my sport."), perceived emotional and physical exhaustion (e.g. "I am exhausted by the mental and physical demands of my sport."), and sport devaluation (e.g. "I don't care as much about my sport performance as I used to."). Each subscale contains 5-items and is scored on a five-point Likert scale (1 = *almost never* to 5 = *almost always*). During validation of this scale Raedeke and Smith (2001) provided evidence to support the validity and reliability of measurement associated with the scale. This included sufficient internal consistency (α = RA .84, α = E .89 and α = D .89) and test-retest reliability (r = RA .86, r = E .92 and r = D .92). The internal reliabilities for these scales, and others used in the current study, are presented in Table 1.

Multidimensional Perfectionism: Self-oriented (SOP) and socially prescribed perfectionism (SPP) were measured using Hewitt and Flett's (1991) Multidimensional Perfectionism Scale (HMPS). Responses on the self-oriented perfectionism subscale reflect excessive striving for high personal standards and self-critical tendencies (e.g., "I must always be successful in activities that are important to me."). In contrast, responses to the socially prescribed perfectionism subscale reflect the belief that significant others have exceedingly high standards

and that acceptance is based on the attainment of those standards (e.g., "The people around me expect me to succeed at everything I do."). The two subscales of the MPS each contain 15-items measured on a seven-point Likert scale (1 = *strongly disagree* to 7 = *strongly agree*). The stem of the instrument was adapted to focus the athletes on their participation in sport ("Listed below are a number of statements concerning how you view your participation in rugby…"). Evidence to support the validity and reliability of the scale has been provided by Hewitt and Flett (1991, 2004). For example, sufficient internal consistency (α = SOP .89 and α = SPP .86) and test-retest reliability (*r* = SOP .88 and *r* = SPP .75) has previously been reported in student and general samples. Recently, researchers have suggested that this scale also has adequate psychometric properties when used to measure these dimensions of perfectionism in athletes (e.g., Appleton, Hall, & Hill, 2009; Hill et al., 2008).

Perfectionistic cognitions: The frequency of perfectionistic cognitions was measured using Flett et al.'s (1998) Perfectionism Cognitions Inventory (PCI). Responses reflect the frequency of the experience of ruminative cognitions involving perfectionistic themes and the need to be perfect (e.g., "I should be perfect." "My performance should be flawless."). The stem of the instrument was adapted to focus the athletes on their participation in sport ("Please read each thought and indicate with respect to your most recent performances in training and matches how frequently, if at all, the thought occurred to you over the last week or so."). The scale contains 25-items and is scored on a five-point Likert scale (1 = *not at all* to 5 = *all the time*). Evidence to support the validity and reliability of measurement associated with the scale has been provided by Flett et al. (1998).

These authors have reported both sufficient internal consistency (α = .94) and test-retest reliability of the scale (3-months *r* = .67).

Results

Preliminary analysis

Due to large amounts of missing data from individual respondents (> 5%), eight participants were removed from the sample. Once these values were removed, there were 164 complete cases and 30 cases with incomplete data. For those with incomplete data, the average percentage of missing values due to item non-response was 1.60% (*SD* = 0.52, range = 1.40 to 2.90%). This percentage of missing data is the equivalent of just over 1 item (*M* = 1.13, *SD* = 0.35, range 1 to 2). There were six unique patterns of missing data (participants with the same single item not complete) that accounted for the missing data of 15 participants. The other 15 participants had missing data in a pattern not shared with other participants. The ratio of patterns of missing data to the number of participants with missing data was = .70 (ratio includes unique and non-unique patterns of missing data). Consequently, it was assumed that the mechanism that underpins the missing data is likely to be a non-systematic. Given the low number of missing items, each missing item was replaced using the mean of each case's available non-missing items from the relevant subscale. This method of imputation is considered to be an appropriate strategy when the amount of missing data is low and items are highly correlated (Graham, Cumsille**,** & Elek-Fisk, 2003).

Next, internal reliability analysis (Cronbach's alpha) was performed on each scale. Internal consistencies are displayed in Table 1. With the exception of

the socially prescribed perfectionism, all scales demonstrated sufficient internal consistency (above 10 items α = >.70, above 5 items α = >.60; Loewenthal, 2001). Based on inter-item correlations, 1 item was removed from the socially prescribed perfectionism scale ("My parents rarely expect me to excel in all aspects of my life." – the word seldom was replaced with rarely from the original item). As a result, the scale demonstrated adequate internal consistency (α = .71).

Finally, measured variables (e.g., perfectionistic cognitions) were screened for univariate outliers (see Tabachnick & Fidell, 2007). Standardised z-scores larger than 3.29 (p <.001, two-tailed) were used as criteria for univariate outliers. This procedure led to the removal of 2 participants. Apart from the sport devaluation variable (skewness = 1.15, *SE* = .18, zskew = 6.58), variables were considered to be approximately univariate normal (absolute skewness *M* = 0.16, *SD* = 0.13, *SE* = 0.18, absolute kurtosis *M* = 0.50, *SD* = 0.22, *SE* = 0.35). The sport devaluation variable was subsequently transformed using the guidelines provided by Tabachnick and Fidell (2007). The transformed variable (-1/sport devaluation) was no longer significantly skewed (skewness = -0.18, *SE* = .18, zskew = -1.01) and had a large positive significant linear relationship with the original variable (r = .94). This transformed variable was used in subsequent analyses.

Descriptive statistics and zero-order correlations

The descriptive statistics are reported in Table 1. Participants reported moderate-to-high levels of self-oriented perfectionism, moderate levels of socially prescribed perfectionism (seven-point Likert scale), and moderate frequency of perfectionistic cognitions (five-point Likert scale). The sample also reported

moderate-to-low levels across all symptoms of burnout (five-point Likert scale). The mean values reported across these variables are of a similar magnitude to those reported elsewhere in comparable athlete samples (e.g., see Lemyre, Hall, & Roberts, 2008).

The zero-order correlations between dimensions of perfectionism, the frequency of perfectionistic cognitions and symptoms of athlete burnout are also reported in Table 1. Self-oriented perfectionism was negatively related to emotional and physical exhaustion and sport devaluation, and unrelated to a reduced sense of athletic accomplishment. Socially prescribed perfectionism was positively related to all symptoms of athlete burnout. The frequency of perfectionistic cognitions was positively related a reduced sense of accomplishment and emotional and physical exhaustion but unrelated to sport devaluation.

Regression of symptoms of athlete burnout on trait perfectionism and the frequency of perfectionistic cognitions

The same analytical strategy utilised by Flett and colleagues (Flett et al., 2007: Flett et al., 1998) when examining the incremental predictive ability of the frequency of perfectionistic cognitions above depression and anxiety was employed in the current study. Specifically, three hierarchical regression analyses were used to assess whether perfectionistic cognitions explain additional variance in symptoms of athlete burnout after controlling for the variance explained by self-oriented and socially prescribed perfectionism. In each regression, a predictor block consisting of self-oriented and socially prescribed perfectionism was entered in step one. This procedure was followed by the frequency of

perfectionistic cognitions in step two. The contribution of the frequency of perfectionistic cognitions was determined by examining the statistical significance of the change in the variance accounted for in the criterion variable following its entry in to step two. The results of these analyses are reported in Table 2.

The first hierarchical regression included reduced sense of athletic accomplishment as the criterion variable. Self-oriented and socially prescribed perfectionism accounted for 15% of variance in a reduced sense of accomplishment, $F_{(2, 189)} = 16.27$, $p < .01$. Both dimensions of perfectionism were significant individual predictors (β = SOP -.17, $p < .05$, and β = SPP .37, $p < .01$). Entering the frequency of perfectionistic cognitions resulted in an additional 4% of variance being explained in a reduced sense of accomplishment. This change was statistically significant, $\Delta F_{(1, 188)} = 10.27$, $p < .01$.

The second hierarchical regression included emotional and physical exhaustion as the criterion variable. Self-oriented and socially prescribed perfectionism accounted for 13% of variance in a reduced sense of accomplishment, $F_{(2, 189)} = 13.72$, $p < .01$. Both dimensions of perfectionism were significant individual predictors (β = SOP -.19, $p < .01$, and β = SPP .33, $p < .01$). Entering the frequency of perfectionistic cognitions resulted in an additional 3% of variance being explained in emotional and physical exhaustion. This change was statistically significant, $\Delta F_{(1, 188)} = 6.12$, $p < .05$.

The third hierarchical regression included sport devaluation as the criterion variable. Self-oriented and socially prescribed perfectionism accounted for 24% of variance in sport devaluation, $F_{(2, 189)} = 29.72$, $p < .01$. Both dimensions of perfectionism were significant individual predictors (β = SOP -.47,

$p < .01$, and β = SPP .19, $p < .01$). Entering the frequency of perfectionistic cognitions resulted in an additional 3% of variance being explained in sport devaluation. This change was statistically significant, $\Delta F_{(1, 188)} = 7.71$ (1, 188), $p < .01$. Following the introduction of the frequency of perfectionistic cognitions, socially prescribed perfectionism was no longer a significant predictor of sport devaluation (β = .10, $p > .05$).

Discussion

The aims of this investigation were: (i) to examine the relationship between the frequency of perfectionistic cognitions and symptoms of athlete burnout; and (ii) to examine whether the frequency of perfectionistic cognitions account for additional unique variance in symptoms of athlete burnout above the variance accounted for by self-oriented and socially prescribed dimensions of perfectionism. It was hypothesised that the frequency of perfectionistic cognitions would be positively related to all symptoms of athlete burnout and would predict unique variance in athlete burnout above that explained by self-oriented and socially prescribed perfectionism. The analyses partially supported these hypotheses. The frequency of perfectionistic cognitions displayed a moderate positive correlation with a reduced sense of athletic accomplishment and emotional and physical exhaustion but was not related to sport devaluation. The frequency of perfectionistic cognitions also explained 3-4% of unique variance in symptoms of athlete burnout after controlling for self-oriented and socially prescribed dimensions of perfectionism.

To date, researchers have focused on understanding the influence of trait dimensions of perfectionism on athlete burnout. The current study provides initial

evidence that consideration of more state-like components of perfectionism may further understanding of this relationship. Outside of sport, research has found that the frequency of perfectionistic cognitions is associated with negative affective experiences (e.g., Flett et al., 1998; Flett et al., 2004; Rudolph et al., 2007). Although the frequency of perfectionistic cognitions has not been directly examined in sport, based on their examination of trait dimensions of perfectionism Frost and Henderson (1991) contended that perfectionism may entail a ruminative cognitive style that is likely to undermine the achievement motivation of athletes and foster negative feelings towards sport. The current findings support these suggestions in that the frequency of automatic thoughts that reflect perfectionistic themes was associated with the sports disaffection in the form of higher levels of reduced sense of accomplishment and exhaustion.

It is not clear why the frequency of perfectionistic cognitions was unrelated to sport devaluation at a bivariate level. It is possible that the frequency of perfectionistic cognitions is not an antecedent of this symptom of athlete burnout. Alternatively, this finding may be indicative of different temporal processes that underpin symptoms of burnout (see Leiter & Maslach, 1988). The results of the regression, in which the frequency of perfectionistic cognitions were positively related to sport devaluation, highlight a further possibility. It may be that the pattern of relationships between the frequency of perfectionistic cognitions and trait dimensions of perfectionism (positive), and trait dimensions of perfectionism and sport devaluation (both positive and negative), explain this relationship. Specifically, this pattern of relations have the potential to result in a near zero correlation between the frequency of perfectionistic cognitions and this

symptom (see MacKinnon, Krull, & Lockwood, 2000). In this case, the relationship between the frequency of perfectionistic cognitions and devaluation would only be revealed in the semi-partial correlations, when the relationship between trait dimensions of perfectionism and the frequency of perfectionistic cognitions are controlled.

As has been found in studies examining the incremental predictive ability of the frequency of perfectionistic cognitions in relation to psychological distress (Flett et al., 1998; Flett et al., 2007), the frequency of perfectionistic cognitions explained variance in burnout symptoms after controlling for self-oriented and socially prescribed perfectionism. Based on Cohen's (1992) guidelines, an increase of 1-9% would be considered small-to-moderate. The predictive ability of the frequency of perfectionistic cognitions above trait dimensions was therefore small. However, the magnitude of the incremental variance is comparable to the 2-8% additional variance explained in anxiety and depression (Flett et al., 1998; Flett et al., 2007). Moreover, as there is less variance to be explained in burnout symptoms after controlling for trait dimensions, one would not expect large amounts of additional variance to be explained (Hunsley & Meyer, 2003). Overall, then, the findings are consistent with research in this area and support the incremental validity of the frequency of perfectionistic cognitions.

Flett et al. (2007) have argued that the unique predictive ability of the frequency of perfectionistic cognitions provide direct support for its inclusion in intervention aimed at reducing the aversive consequences of perfectionism. The current findings support these suggestions and indicate that targeting the frequency of perfectionistic cognitions is also necessary to reduce perfectionism

fuelled burnout. It is noteworthy, however, that because of the influence of trait dimensions of perfectionism on both burnout and perfectionistic cognitions, moderating the frequency of perfectionistic cognitions is a strategy that should augment, and not substitute, targeting trait dimensions of perfectionism. Solely targeting the frequency of perfectionistic cognitions is unlikely to have a long-term impact when the core beliefs underlying these thoughts remain intact. Interventions aimed at reducing perfectionism-fuelled burnout must, therefore, be inclusive of the interplay between both trait and more state-like components of perfectionism (Flett et al., 2007).

The findings must be considered in context of the study's limitations. A measure of other-oriented perfectionism was not included in the current study. This was because this dimension is principally associated with inter-personal difficulties, rather than personal maladjustment. It is for this reason that this dimension has previously been excluded when considering the relationship between trait perfectionism and athlete burnout. However, because of its omission, in the current study we did not assess the incremental predictive ability of perfectionistic cognitions across all trait dimensions of Hewitt and Flett's (1991) model. In future researchers may wish to do so, as well as including other trait measures of perfectionism (e.g., S-MPS-2; Gotwals & Dunn, 2008).

In order to obtain an acceptable level of internal reliability, an item from the socially prescribed perfectionism subscale was removed. The correlation between the original 15-item scale and the 14-item scale was extremely large (r = .99). Consequently, the effect of the removal of this item in unlikely to be

substantial. However, it highlights that the psychometric properties of this subscale requires examination in future research. The current findings are also limited by the characteristics of the sample. In future researchers should, therefore, examine the degree to which the observed relationships generalise to other samples and contexts (e.g., gender and sport).

Finally, the incremental predictive ability of the frequency of perfectionistic cognitions was small. Researchers should consider re-examining the predictive ability of the frequency of perfectionistic cognitions alongside other potentially important variables (e.g., negative affective experiences, general rumination, etc.). Emerging theoretical models of stress and burnout may prove useful in identifying these variables. For example, cognitive activation theory (Ursin & Eriksen, 2004) and self-determination theory (Cresswell & Eklund, 2005) include a range of variables that may have additional predictive ability (e.g., coping, psychological need thwarting). This type of research is required in order to further establish the relative importance of the frequency of perfectionistic cognitions as an adjunct to trait perfectionism when predicting athlete burnout.

In conclusion, to date, researchers have focused on examining the relationship between trait dimensions of perfectionism and athlete burnout. Our findings indicate that the frequency of perfectionistic cognitions is an additional feature of perfectionism that is positively related to burnout symptoms and explains unique variance in these symptoms. As suggested by Flett et al. (2007), the frequency of perfectionistic cognitions appears to provide additional unique information about the cognitive characteristics of perfectionists that may be

important in terms of the outcomes of perfectionism independent of its trait dimensions. The predictive ability of models of the relationship between trait perfectionism and athlete burnout may therefore be enhanced by including the frequency of perfectionistic cognitions. Finally, targeting the experience of perfectionistic cognitions, in addition to trait perfectionism, may also be useful additional focus of interventions aimed at managing athlete burnout that arises as a consequence of perfectionism.

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Table 1 *Descriptive statistics, bivariate correlations, and internal reliability coefficients for dimensions of perfectionism, perfectionistic cognitions and symptoms of athlete burnout*

Variable	1	2	3	4	5	*M*	*SD*	α
1. Self-oriented perfectionism						5.06	0.77	.84
2. Socially prescribed perfectionism	-12					3.59	0.61	.71
3. Perfectionistic cognitions	.42**	.47**				3.08	0.62	.91
4. Reduced sense of athletic accomplishment	-.12	.35**	.27**			2.39	0.62	.69
5. Emotional and physical exhaustion	-.15*	.30**	.21**	.41**		2.15	0.73	.84
6. Sport devaluation	-.45**	.14	.03	.48**	.53**	1.65	0.71	.85

** $p < .01$ * $p < .05$

Table 2 *Hierarchical regression analyses with dimensions of perfectionism and perfectionistic cognitions predicting symptoms of athlete burnout*

Criterion Variable	Predictor variables	*F*	df	R^2	R^2 change	β	*t*
RA							
Step 1	SOP	16.27**	2, 189	.15		-.17	-2.49**
	SPP					.37	-5.40**
Step 2	SOP	14.81**	3, 188	.19	.04**	-.27	-3.65**
	SPP					.26	-3.44**
	PCI					.26	-3.21**
E							
Step 1	SOP	13.72**	2, 189	.13		-.19	-2.79***
	SPP					.33	-4.74***
Step 2	SOP	11.66**	3, 188	.16	.03**	-.27	-3.66***
	SPP					.23	-3.08***

	PCI					.22	-2.59***
D							
Step 1	SOP	29.72**	2, 189	.24		-.47	-7.41***
	SPP					.19	-3.03***
Step 2	SOP	23.09**	3, 188	.27	.03**	-.55	-8.01***
	SPP					.10	-1.46***
	PCI					.22	-2.78***

** $p < .01$ * $p < .05$